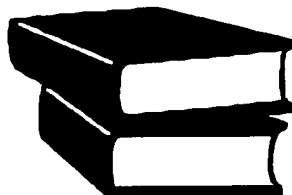




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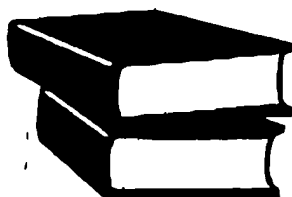
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Country US Patent No. 5715270 Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐Country _____ Patent No. _____ Pages _____ Tech Center _____ Found ☐

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Records 1-2 of 2 In full Format

☐ 1. 2/19/1 (Item 1 from file: 351)

011713212 **Image available**

WPI Acc No: 1998-130122/199812

XRPX Acc No: N98-102766

Diode laser array e.g. for laser guidance system - has
multiple laser head assemblies that combine single wavelength beams from
multiple diode lasers

Patent Assignee: MCDONNELL DOUGLAS CORP (MCDD)

Inventor: HAAKE J M; RICE R R; ZEDIKER M S

Number of Countries: 076 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5715270	A	19980203	US 96722619	A	19960927	199812 B
WO 9813910	A1	19980402	WO 97US16445	A	19970916	199820
AU 9746461	A	19980417	AU 9746461	A	19970916	199834
EP 1008212	A1	20000614	EP 97945210	A	19970916	200033
			WO 97US16445	A	19970916	
JP 2001501777	W	20010206	WO 97US16445	A	19970916	200111
			JP 98515715	A	19970916	

Priority Applications (No Type Date): US 96722619 A 19960927

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

US 5715270 A 15 H01S-003/091

WO 9813910 A1 E 27 H01S-003/091

Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU
CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV
MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ
VN

Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GH GR IE IT
KE LS LU MC MW NL OA PT SD SE SZ UG ZW

AU 9746461 A H01S-003/091 Based on patent WO 9813910

EP 1008212 A1 E H01S-003/091 Based on patent WO 9813910

Designated States (Regional): DE FR IT

JP 2001501777 W 33 H01S-005/40 Based on patent WO 9813910

Abstract (Basic): US 5715270 A

The array has a number of laser head assemblies (400A, 400B, 400C, ..., 400N), each containing M diode laser modules (410) generating M laser beams, each having different single wavelength. These are incident on M-2 dichroic filters, each transmits a corresponding one of the M laser beams and reflects all of the others.

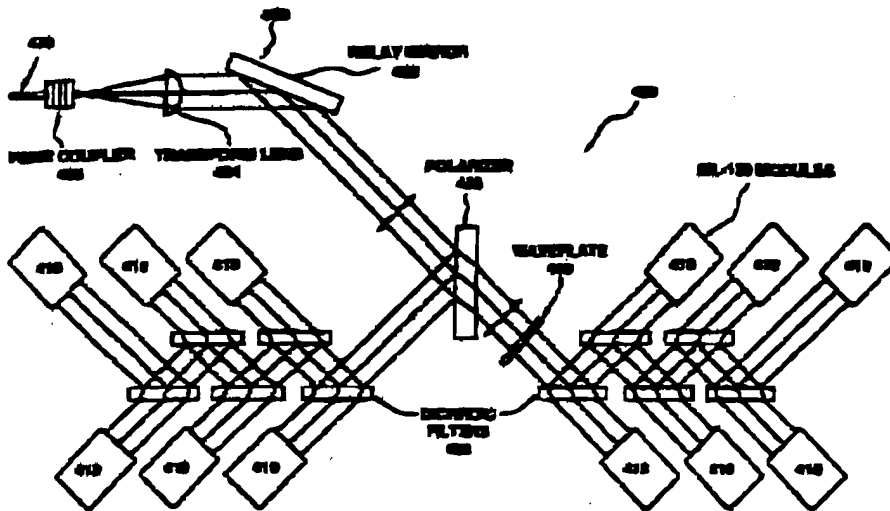
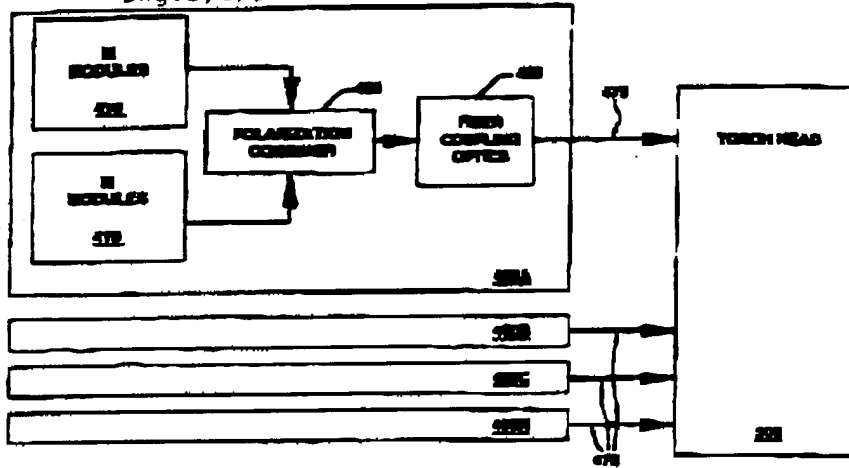
A polariser (460) combines the beams which are transmitted to an optical fiber (470) via coupling optics (460), which include a relay mirror (462), a transform lens (464) and a fiber coupler (466). The N optical fibers from the N laser head assemblies are recollimated and focused onto a single spot by an optical assembly. This optical assembly may be N collimating lenses each receiving one of output beams with a single transform lens focusing the recollimated output beams.

USE - Can be used in laser tracking, laser guidance, laser imaging, offensive and defensive weapon systems, material processing, e.g.,

welding and in medicine, e.g., surgical and diagnostic aids.

ADVANTAGE - Produces high power output with high efficiency, all collimated laser beams can be produced using laser diode arrays and a high intensity is generated at workpiece.

Dwg. 5, 6/9



Title Terms: DIODE; LASER; ARRAY; LASER; GUIDE; SYSTEM; MULTIPLE; LASER;
HEAD; ASSEMBLE; COMBINATION; SINGLE; WAVELENGTH; BEAM; MULTIPLE; DIODE;
LASER
Index Terms/Additional Words: HIGH; FLUENCY
Derwent Class: P81; S05; U12; V07; V08; W06; X24
International Patent Class (Main): H01S-003/091; H01S-005/40
International Patent Class (Additional): G02B-006/28; H01S-003/00;
H01S-003/06; H01S-003/08; H01S-003/09; H01S-005/026
File Segment: EPI; EngPI
Manual Codes (EPI/S-X): S05-B01; S05-D02X; S05-X; U12-A01B1J; U12-A01C;
V07-G10C; V07-K04; V08-A04A; V08-A07; V08-A08; W06-A06; X24-D03

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2. 2/19/2 (Item 2 from file: 345)

14138034

Basic Patent (No,Kind,Date): US 5715270 A 19980203

PATENT FAMILY:

AUSTRALIA (AU)

Patent (No,Kind,Date): AU 9746461 A1 19980417

HIGH EFFICIENCY, HIGH POWER DIRECT DIODE LASER SYSTEMS AND METHODS
THEREFOR (English)

Patent Assignee: MC DONNELL DOUGLAS CORP

Author (Inventor): ZEDIKER MARK S; RICE ROBERT R; HAAKE JOHN M

Priority (No,Kind,Date): US 722619 A 19960927; WO 97US16445 W
19970916

Applic (No,Kind,Date): AU 9746461 A 19970916

IPC: * H01S-003/091; H01S-003/09; H01S-003/08; H01S-003/00

Derwent WPI Acc No: * G 98-130122

Language of Document: English

EUROPEAN PATENT OFFICE (EP)

Patent (No,Kind,Date): EP 1008212 A1 20000614

HIGH EFFICIENCY, HIGH POWER DIRECT DIODE LASER SYSTEMS AND METHODS
THEREFOR (English; French; German)

Patent Assignee: MC DONNELL DOUGLAS CORP (US)

Author (Inventor): ZEDIKER MARK S (US); RICE ROBERT R (US); HAAKE
JOHN M (US)

Priority (No,Kind,Date): WO 97US16445 W 19970916; US 722619 A
19960927

Applic (No,Kind,Date): EP 97945210 A 19970916

Designated States: (National) DE; FR; IT

IPC: * H01S-003/091; H01S-003/09; H01S-003/08; H01S-003/00

Derwent WPI Acc No: * G 98-130122

Language of Document: English
Patent (No,Kind,Date): EP 1008212 A4 20010228
HIGH EFFICIENCY, HIGH POWER DIRECT DIODE LASER SYSTEMS AND METHODS
THEREFOR (English; French; German)
Patent Assignee: MC DONNELL DOUGLAS CORP (US)
Author (Inventor): ZEDIKER MARK S (US); RICE ROBERT R (US); HAAKE
JOHN M (US)
Priority (No,Kind,Date): WO 97US16445 W 19970916; US 722619 A
19960927
Applic (No,Kind,Date): EP 97945210 A 19970916
Designated States: (National) DE; FR; IT
IPC: * H01S-003/091; H01S-003/09; H01S-003/08; H01S-003/00
Derwent WPI Acc No: * G 98-130122
Language of Document: English
EUROPEAN PATENT OFFICE (EP)

Legal Status (No,Type,Date,Code,Text):

EP 1008212 P 19960927 EP AA PRIORITY (PATENT
APPLICATION) (PRIORITAET (PATENTANMELDUNG))

US 722619 A 19960927
EP 1008212 P 19970916 EP AA PCT-APPLICATION
(PCT-ANMELDUNG)
WO 97US16445 W 19970916
EP 1008212 P 19970916 EP AE EP-APPLICATION
(EUROPAEISCHE ANMELDUNG)
EP 97945210 A 19970916
EP 1008212 P 20000614 EP AK DESIGNATED CONTRACTING
STATES IN AN APPLICATION WITH SEARCH REPORT:
(IN EINER ANMELDUNG BENANNT VERTRAGSSTAATEN)

DE FR IT
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WITH SEARCH REPORT (VEROEFFENTLICHUNG DER
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19990423
EP 1008212 P 20010228 EP AK DESIGNATED CONTRACTING
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REPORT: (IN EINEM ERGAENZENDEN
RECHERCHENBERICHT BENANNT VERTRAGSSTAATEN)

DE FR IT
EP 1008212 P 20010228 EP A4 SUPPLEMENTARY SEARCH REPORT
(ERGAENZENDER RECHERCHENBERICHT)
20010117

UNITED STATES OF AMERICA (US)

Patent (No,Kind,Date): US 5715270 A 19980203
HIGH EFFICIENCY, HIGH POWER DIRECT DIODE LASER SYSTEMS AND METHODS
THEREFOR (English)
Patent Assignee: MC DONNELL DOUGLAS CORP (US)
Author (Inventor): ZEDIKER MARK S (US); RICE ROBERT R (US); HAAKE
JOHN M (US)
Priority (No,Kind,Date): US 722619 A 19960927
Applic (No,Kind,Date): US 722619 A 19960927
National Class: * 372075000; 372109000; 372043000; 385024000;
385047000
IPC: * H01S-003/091; H01S-003/00; G02B-006/28
Derwent WPI Acc No: * G 98-130122; G 98-130122
Language of Document: English

* UNITED STATES OF AMERICA (US)

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US 5715270 P 19960927 US AE APPLICATION DATA (PATENT)
(APPL. DATA (PATENT))

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ASSIGNMENT OF ASSIGNOR'S
INTEREST
MCDONNELL DOUGLAS CORPORATION P.O. BOX 516
ST. LOUIS, MISSOURI 63166-051 ; ZEDIKER, MARK
S. : 19960920; RICE, ROBERT R. : 19960920;
HAAKE, JOHN M. : 19960920
US 5715270 P 19980203 US A PATENT
US 5715270 P 20000801 US RF REISSUE APPLICATION FILED
(REISSUE APPL. FILED)
20000203

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)
Patent (No,Kind,Date): WO 9813910 A1 19980402
HIGH EFFICIENCY, HIGH POWER DIRECT DIODE LASER SYSTEMS AND METHODS
THEREFOR (English)
Patent Assignee: MC DONNELL DOUGLAS CORP (US)
Author (Inventor): ZEDIKER MARK S; RICE ROBERT R; HAAKE JOHN M
Priority (No,Kind,Date): US 722619 A 19960927
Applic (No,Kind,Date): WO 97US16445 A 19970916
Designated States: (National) AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY;
CA; CH; CN; CU; CZ; DE; DK; EE; ES; FI; GB; GE; HU; IL; IS; JP; KE;
KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX;
NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; TJ; TM; TR; TT; UA; UG;
UZ; VN; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM (Regional) GH; KE; LS;
MW; SD; SZ; UG; ZW; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT;
LU; MC; NL; PT; SE; BF; BJ; CF
Filing Details: WO 100000 With international search report
IPC: * H01S-003/091; H01S-003/09; H01S-003/08; H01S-003/00
Derwent WPI Acc No: * G 98-130122
Language of Document: English

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)
Legal Status (No,Type,Date,Code,Text):
WO 9813910 P 19960927 WO AA PRIORITY (PATENT)
US 722619 A 19960927
WO 9813910 P 19970916 WO AE APPLICATION DATA (APPL.
DATA)
WO 97US16445 A 19970916
WO 9813910 P 19980402 WO AK DESIGNATED STATES CITED IN A
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(DESIGNATED STATES CITED IN A PUBLISHED APPL.
WITH SEARCH REPORT)
AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ
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KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO
NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA
UG UZ VN AM AZ BY KG KZ MD RU TJ TM
WO 9813910 P 19980402 WO AL DESIGNATED COUNTRIES FOR
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PUBLISHED APPL. WITH SEARCH REPORT)
GH KE LS MW SD SZ UG ZW AT BE CH DE DK ES FI
FR GB GR IE IT LU MC NL PT SE BF BJ CF
WO 9813910 P 19980402 WO A1 PUBLICATION OF THE
INTERNATIONAL APPLICATION WITH THE
INTERNATIONAL SEARCH REPORT (PUB. OF THE
INTERNATIONAL APPL. WITH THE INTERNATIONAL
SEARCH REPORT)
WO 9813910 P 19980430 WO DFPE REQUEST FOR PRELIMINARY
EXAMINATION FILED PRIOR TO EXPIRATION OF 19TH
MONTH FROM PRIORITY DATE
WO 9813910 P 19980812 WO 121 EP: PCT APP. ART. 158 (1)
(EP: PCT ANM. ART. 158 (1))

WO 9813910	P	19990326	WO ENP	ENTRY INTO THE NATIONAL
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WO 9813910	P	19990729	DE 8642/REG	IMPACT ABOLISHED FOR DE
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WO 9813910	P	20000327	WO NENP	NON-ENTRY INTO THE NATIONAL
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			CA	

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